SILICON ON INSULATOR DEVICE WITH IMPROVED HEAT REMOVAL AND METHOD OF MANUFACTURE

ABSTRACT OF THE DISCLOSURE

A semiconductor device is fabricated in a silicon on insulator (SOI) substrate including a supporting silicon substrate, a silicon oxide layer supported by the substrate, and a silicon layer overlying the silicon oxide layer. An electrical component is fabricated in the silicon layer over a portion of the silicon oxide layer, and then the substrate opposite from the component is masked and etched. A metal layer is then formed in the portion of the substrate which has been removed by etching with the metal layer providing heat removal from the component. In an alternative embodiment, the silicon oxide layer overlying the portion of the substrate is removed with the metal layer abutting the silicon layer. In fabricating the device, preferential etching is employed to remove the silicon in the substrate with the silicon oxide functioning as an etchant stop. A two step process can be employed including a first oxide etch to etch the bulk of the silicon and then a more selective but slower etch. Then, the exposed silicon oxide can then be removed, as in the alternative embodiment, by a preferential etchant of silicon oxide.